

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A cooler with a circulating cooling liquid for cooling a heating element of an electronic device which cools a heating element provided on the electronic device comprising:

a substrate;

a liquid cooling mechanism, composed of:

a flat-shape heat sink formed in a flat shape with a liquid channel therein having to have a heat-receiving face to be made in contact with said heating element,

a pump portion with a flat-shape housing having an impeller rotatably provided therein a flat-shape to circulate said cooling liquid,

a plurality of metal pipes connected to the liquid channel for circulating said cooling liquid;

a forcible air cooling mechanism, composed of:

a radiating fin provided on outer surfaces of said metal pipes and

a fan to cool said radiating fin and said flat-shape housing,

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wherein said pump portion of the liquid cooling mechanism and said fan of the forcible air cooling mechanism being are provided on the substrate in a vertically aligned positional relationship such so that said liquid cooling mechanism and is integrated with said forcible air cooling mechanism are unified.

Claim 2 (Currently amended): The cooler for an electronic device as claimed in Claim 1, wherein an axis of ration of said impeller and an axis of ration of said fan are co-linear are arranged in such a manner that the axis of the rotation of the impeller forming said liquid cooling mechanism and the axis of the rotation of the fan forming said forcible air cooling mechanism are positioned on an identical line.

Claim 3 (Currently amended): The cooler for an electronic device as claimed in Claim 1 or 2, wherein said fan and said impeller are rotated together as each is under an influence of a magnetic force.

Claim 4 (Currently amended): The cooler for an electronic device as claimed in Claim 3, wherein a an active magnet asserting a magnetic force for rotating the fan which rotates under the an influence of the a magnetic fluctuation of the a motor substrate to rotate the fan and a magnet for driving the impeller are is placed on above said fan, while a the passive magnet with a magnetic

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force influenced by which receives the magnetic force from said magnet for driving the impeller,
is placed on said impeller.

Claim 5 (Currently amended): The cooler for an electronic device as claimed in Claim 3, wherein a an active magnet asserting a magnetic force for rotating the fan which rotates under the
an influence of the a magnetic fluctuation of the motor substrate to rotate the fan is placed on above
said fan, while a passive magnet which receives with a magnetic force influenced by the magnetic
force of said active magnet for rotating the fan is placed on above said impeller such that so as to
allow said fan and said impeller are to rotated together.

Claim 6 (Currently amended): The cooler for an electronic device as claimed in Claim 4, wherein said motor substrate is made of an insulating plate having a coil formed on the surface
thereof, said fan is being in the form of a thin plate having a plurality of bent blades on the a
periphery of a thin plate having a rotation axis at the a middle portion thereof, and said motor
substrate, said fan and said pump portion in a flat form are being laminated on each other.

Claim 7 (Currently amended): The cooler for an electronic device as claimed in Claim 1, wherein the plurality of metal pipes each connecting the pump portion to the liquid channel of the heat sink are folded at least once between the pump portion and the heat sink, and said radiating fin is placed disposed between the folded metal pipes.

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Claim 8 (Currently amended): The cooler for an electronic device as claimed in Claim 7, wherein said radiating fin and the portions of said plurality of metal pipes on which the radiating fin is placed are mounted on, and in contact with, a mounting plate having the housing provided thereon to form the pump portion.

Claim 9 (Currently amended): The cooler for an electronic device as claimed in Claim 8, wherein a port capable of having allowing air passing through being passed therethrough is formed on at least one portion of the mounting plate where the radiating fin is positioned.

Claim 10 (Currently amended): The cooler for an electronic device as claimed in Claim 1, wherein the heat sink is made of aluminum ~~which is a highly heat-conductive material~~, and that the metal pipe is made of copper.

Claim 11 (Currently amended): The cooler for an electronic device as claimed in Claim 5, wherein said motor substrate is made of an insulating plate having a coil ~~formed on the surface thereof~~, said fan is in the form of a thin plate having a plurality of bent blades on ~~the~~ a periphery of a the thin plate having a rotation axis at ~~the~~ a middle portion ~~thereof~~, and said motor substrate, said fan and said pump portion in a flat form are laminated on each other.